**4th Grade**

**Science**

**Differentiated Instructional Activity**

*Exploring Food Webs*

**Purpose & Relationship to Current Unit of Study**

The students are currently studying Life Sciences and more specifically, the energy needs in an ecosystem. This activity promotes in-depth understanding of the interactions between organisms and how energy is produced, consumed, and transferred.

*Tennessee State Standards*

* GLE 0407.3.1 Demonstrate that plants require light energy to grow and survive.
* GLE 0407.3.2 Investigate different ways organisms meet their energy needs.
* SPI 0407.2.1 Recognize the impact of predation and competition on an ecosystem.
* SPI 0407.3.1 Determine how different organisms function within an environment in terms of their positions on an energy pyramid.

**Activity Description**

*Materials*

* Identifying Tags (snake, raccoon, bullfrog, weasel, mouse, rabbit, grasshopper, deer, fox, coyote, eagle, hawk, bear, bobcat, owl, mountain lion, grass, crops, trees, berries, chipmunk, squirrel, mushrooms)
* Large ball of yarn

**Implementation**

The desks in the classroom will need to be moved so that the students have room to sit on the floor. When the students have been seated, I will distribute an identifying tag to each of them. I will identify myself as the Sun. The activity will begin with an exchange of dialogue involving the vocabulary of this unit. (Producer, Consumer, Decomposer, Herbivore, Omnivore, Carnivore, Predator, Prey)

When I feel that the students are ready to proceed, I will ask the students where the producers/plants obtain energy. The students should identify the Sun as the correct starting point. Since I am the Sun, I will hold the end of string. I will ask the students to explain where the ball of yarn should go next. When the students have identified that the ball of yarn goes to a producer, I will roll the ball of yarn to one of the producers within the circle. I will explain to the students that in order for the activity to proceed, the ball of yarn is to be gently rolled to the succession of consumers within the circle. I will also explain that they must hold the string before passing it on.

As the ball of yarn is passed, I will ask the students to identify and differentiate between the herbivores, omnivores, carnivores, predators, and prey that are part of the activity. After a few rounds, the students should be able to see how all of the organisms within an ecosystem are connected. I will be sure that each student within the circle has an opportunity to receive and pass the ball of yarn at least once during the activity.

I will instruct the students to stop passing the ball of yarn when each student has participated. I will then tell the students that I am going to tug gently on the string, and instruct those students who are directly connected to the sun to gently tug their strings also and those students who feel a tug on the string should also tug. Eventually, everyone in the circle will be tugging and being tugged. I will ask the students to explain what this means. They should identify that this symbolizes the interconnectedness of all organisms.

To conclude the activity, I will explain to the students that pesticides have poisoned all of the producers within this ecosystem. I will ask all of the students who are identified as producers to drop their strings. I will then ask the students who are connected to the grasses to drop their strings—and so on until all of the students have dropped the string. I will ask the students to describe what this part of the activity represents. They should identify that this symbolizes the interdependence of all organisms.

**Evaluation**

I first attempted this activity with the students on a day that may not have been the most optimal. There were various distractions and the students were not exhibiting their best behavior. It was difficult to keep them on task and focused on the activity. After several attempts to redirect behavior, I eventually stopped the activity and explained to the students that we would try the activity on another day.

The second attempt was much more productive. The students were highly engaged during the activity and seemed to understand the process with minimal prompting. There was some confusion in the beginning concerning the classifications of herbivore and omnivore, but the confusion diminished considerably each time the ball of yarn was passed and I asked the students to identify the animals and the characteristics and eating habits of that animal.

The students asked many questions during the activity, so I am glad that I took the time to refresh my personal understanding of food webs and the interactions within ecosystems. By the end of the activity, most of the students were grasping the larger concepts concerning environmental interactions and the interdependence among various organisms.

I feel that this activity was an effective tool for demonstrating the ideas surrounding this unit of study. It was apparent that the students enjoyed the activity. Their level of cooperative participation was more than I expected, leading me to believe that this is an activity that I should continue to utilize in the classroom.

I did have the students complete an exit ticket at the end of the activity. After reviewing these, it seems that most of the students do understand the objectives and are able to apply their understanding to other situations. However, twenty of the twenty-three students did not complete the exit ticket. There could be several reasons for this, either I did not allow enough time for them to complete it, the questions in the exit ticket were awkwardly presented, or the students felt pressure to perform. I should have explained the purpose of the exit ticket before distributing it to the students. I think they likened it to a test, which was not my intention.

**Resources**

*Species Cards*

[**http://www.exploringnature.org/graphics/teaching\_aids/classroom\_foodweb\_tifs.pdf**](http://www.exploringnature.org/graphics/teaching_aids/classroom_foodweb_tifs.pdf)

*Activity Modified from*

American Forest Foundation. *Project Learning Tree: PreK-8 Environmental Education Activity Guide*. Washington, D.C.: American Forest Foundation, 2013. Print.